

AMENDMENTS TO THE CLAIM

Please replace the pending claims with the following claim listing:

1-36. (Canceled)

37. (New) A laser light source comprising a first laser for generating a laser beam of a wavelength λ_1 , a second laser for generating a laser beam of a wavelength λ_2 , and a nonlinear optical crystal that uses the laser beam of the wavelength λ_1 and the laser beam of the wavelength λ_2 as inputs and outputs a coherent beam having a wavelength λ_3 of a sum frequency that satisfies a relationship of $1/\lambda_1 + 1/\lambda_2 = 1/\lambda_3$, and wherein the wavelength λ_3 of a sum frequency is a wavelength of 589.3 ± 2 nm that is equivalent to the sodium D line.

38. (New) The laser light source according to claim 37, wherein, representing refractive indices of the wavelengths λ_1 , λ_2 , and λ_3 by n_1 , n_2 , and n_3 , respectively, the nonlinear optical crystal has a periodically poled structure of a period Λ that satisfies

$$2\pi n_3/\lambda_3 = 2\pi n_1/\lambda_1 + 2\pi n_2/\lambda_2 + 2\pi n_2/\Lambda.$$

39. (New) The laser light source according to claim 38, wherein, the nonlinear optical crystal has a waveguide structure.

40. (New) The laser light source according to claim 37, wherein, the wavelength λ_1 is 976 ± 10 nm and the wavelength λ_2 is 1485 ± 20 nm.

41. (New) The laser light source according to claim 37, wherein, the wavelength λ_1 is 1064 ± 10 nm and the wavelength λ_2 is 1320 ± 20 nm.

42. (New) The laser light source according to claim 37, wherein, the wavelength λ_1 is 940 ± 10 nm and the wavelength λ_2 is 1565 ± 35 nm.

43. (New) The laser light source according to claim 40, wherein the second laser for outputting a wavelength $\lambda_2 = 1485 \pm 20$ nm is a DFB laser.

44. (New) The laser light source according to claim 41, wherein the second laser for outputting a wavelength $\lambda_3 = 1320 \pm 20$ nm is a DFB laser.

45. (New) The laser light source according to claim 42, wherein the second laser for outputting a wavelength $\lambda_2 = 1565 \pm 35$ nm is a DFB laser.

46. (New) The laser light source according to claim 37, further comprising:
two polarization maintaining fibers coupled to outputs of the first and second lasers, respectively; and
a multiplexer for multiplexing outputs of the two polarization maintaining fibers and coupling a multiplexed output to the nonlinear optical crystal.

47. (New) The laser light source according to claim 46, wherein the first and second excitation lasers are semiconductor lasers, and at least one of the two polarization maintaining fibers has a fiber Bragg grating.

48. (New) The laser light source according to claim 47, wherein at least one of the first and second lasers has a first facet that is coupled to the polarization maintaining fiber and a second facet opposite to the first facet, the first facet being specified to have a reflectance of 2% or less and the second facet being specified to have a reflectance of 90% or more.

49. (New) A laser light source comprising a first laser for generating a laser beam of a wavelength λ_1 , a second laser for generating a laser beam of a wavelength λ_2 , and a nonlinear optical crystal that uses the laser beam of the wavelength λ_1 and the laser beam of the wavelength λ_2 as inputs and outputs a coherent beam having a wavelength λ_3 of a sum frequency that satisfies a relationship of $1/\lambda_1 + 1/\lambda_2 = 1/\lambda_3$, and wherein the wavelength λ_1 is 940 ± 10 nm, the wavelength λ_2 is 1320 ± 20 nm, and the wavelength λ_3 of the sum frequency is a wavelength of 546.1 ± 5.0 nm corresponding to a yellow range.

50. (New) The laser light source according to claim 49, wherein, representing refractive indices at the wavelengths λ_1 , λ_2 , and λ_3 by n_1 , n_2 , and n_3 , respectively, the nonlinear optical crystal has a periodically poled structure of a period Λ that satisfies

$$2\pi n_3/\lambda_3 = 2\pi n_1/\lambda_1 + 2\pi n_2/\lambda_2 + 2\pi n_2/\Lambda.$$

51. (New) The laser light source according to claim 50, wherein the nonlinear optical crystal has a waveguide structure.

52. (New) The laser light source according to claim 49, wherein the second laser is a DFB laser.

53. (New) The laser light source according to claim 49, further comprising:
two polarization maintaining fibers coupled to outputs of the first and second lasers, respectively; and
a multiplexer for multiplexing outputs of the two polarization maintaining fibers and coupling a multiplexed output to the nonlinear optical crystal.

54. (New) The laser light source according to claim 53, wherein the first and second excitation lasers are semiconductor lasers, and at least one of the two polarization maintaining fibers has a fiber Bragg grating.

55. (New) The laser light source according to claim 54, wherein at least one of the first and second lasers has a first facet that is coupled to the polarization maintaining fiber and a second facet opposite to the first facet, the first facet being specified to have a reflectance of 2% or less and the second facet being specified to have a reflectance of 90% or more.

56. (New) A laser light source comprising a first laser for generating a laser beam of a wavelength λ_1 , a second laser for generating a laser beam of a wavelength λ_2 , and a nonlinear optical crystal that uses the laser beam of the wavelength λ_1 and the laser beam of the wavelength λ_2 as inputs and outputs a coherent beam having a wavelength λ_3 of a sum frequency that satisfies a relationship of $1/\lambda_1 + 1/\lambda_2 = 1/\lambda_3$, and wherein the wavelength λ_1 is 980 ± 10 nm, the wavelength λ_2 is 1320 ± 20 nm, and the wavelength λ_3 of the sum frequency is a wavelength of 560.0 ± 5.0 nm corresponding to a yellow range.

57. (New) The laser light source according to claim 56, wherein, representing refractive indices at the wavelengths λ_1 , λ_2 , and λ_3 by n_1 , n_2 , and n_3 , respectively, the nonlinear optical crystal has a periodically poled structure of a period Λ that satisfies

$$2\pi n_3/\lambda_3 = 2\pi n_1/\lambda_1 + 2\pi n_2/\lambda_2 + 2\pi n_2/\Lambda.$$

58. (New) The laser light source according to claim 57, wherein the nonlinear optical crystal has a waveguide structure.

59. (New) The laser light source according to claim 56, wherein the second laser is a DFB laser.

60. (New) The laser light source according to claim 56, further comprising:
two polarization maintaining fibers coupled to outputs of the first and second lasers, respectively; and
a multiplexer for multiplexing outputs of the two polarization maintaining fibers and coupling a multiplexed output to the nonlinear optical crystal.

61. (New) The laser light source according to claim 60, wherein the first and second excitation lasers are semiconductor lasers, and at least one of the two polarization maintaining fibers has a fiber Bragg grating.

62. (New) The laser light source according to claim 61, wherein at least one of the first and second lasers has a first facet that is coupled to the polarization maintaining fiber and a second facet opposite to the first facet, the first facet being specified to have a reflectance of 2% or less and the second facet being specified to have a reflectance of 90% or more.

63. (New) A laser light source comprising a first laser for generating a laser beam of a wavelength λ_1 , a second laser for generating a laser beam of a wavelength λ_2 , and a nonlinear optical crystal that uses the laser beam of the wavelength λ_1 and the laser beam of a wavelength λ_2 as inputs and outputs a coherent beam having a wavelength λ_3 of a sum frequency that satisfies a relationship of $1/\lambda_1 + 1/\lambda_2 = 1/\lambda_3$, and wherein the wavelength λ_1 is 1064 ± 10 nm, the wavelength λ_2 is 1320 ± 20 nm, and the wavelength λ_3 of the sum frequency is a wavelength of 585.0 ± 5.0 nm corresponding to a yellow range.

64. (New) The laser light source according to claims 63, wherein, representing refractive indices at the wavelengths λ_1 , λ_2 , and λ_3 by n_1 , n_2 , and n_3 , respectively, the nonlinear optical crystal has a periodically poled structure of a period Λ that satisfies

$$2\pi n_3/\lambda_3 = 2\pi n_1/\lambda_1 + 2\pi n_2/\lambda_2 + 2\pi/\Lambda.$$

65. (New) The laser light source according to claim 64, wherein the nonlinear optical crystal has a waveguide structure.

66. (New) The laser light source according to claim 63, wherein the second laser is a DFB laser.

67. (New) The laser light source according to claim 63, further comprising:
two polarization maintaining fibers coupled to outputs of the first and second lasers, respectively; and
a multiplexer for multiplexing outputs of the two polarization maintaining fibers and coupling a multiplexed output to the nonlinear optical crystal.

68. (New) The laser light source according to claim 67, wherein the first and second excitation lasers are semiconductor lasers, and at least one of the two polarization maintaining fibers has a fiber Bragg grating.

69. (New) The laser light source according to claim 68, wherein at least one of the first and second lasers has a first facet that is coupled to the polarization maintaining fiber and a second facet opposite to the first facet, the first facet being specified to have a reflectance of 2% or less and the second facet being specified to have a reflectance of 90% or more.

70. (New) A laser light source comprising a first laser for generating a laser beam of a wavelength λ_1 , a second laser for generating a laser beam of a wavelength λ_2 , and a nonlinear optical crystal that uses the laser beam of the wavelength λ_1 and the laser beam of the wavelength λ_2 as inputs and outputs a coherent beam having a wavelength λ_3 of a sum frequency that satisfies a relationship of $1/\lambda_1 + 1/\lambda_2 = 1/\lambda_3$, and wherein the wavelength λ_1 is 940 ± 10 nm, the wavelength λ_2 is 1550 ± 30 nm, and the wavelength λ_3 of the sum frequency is a wavelength of 585.0 ± 5.0 nm corresponding to a yellow range.

71. (New) The laser light source according to claim 70, wherein, representing refractive indices at the wavelengths λ_1 , λ_2 , and λ_3 by n_1 , n_2 , and n_3 , respectively, the nonlinear optical crystal has a periodically poled structure of a period Λ that satisfies

$$2\pi n_3/\lambda_3 = 2\pi n_1/\lambda_1 + 2\pi n_2/\lambda_2 + 2\pi/\Lambda.$$

72. (New) The laser light source according to claim 71, wherein the nonlinear optical crystal has a waveguide structure.

73. (New) The laser light source according to claim 70, wherein the second laser is a DFB laser.

74. (New) The laser light source according to claim 70, further comprising:
two polarization maintaining fibers coupled to outputs of the first and second lasers,
respectively; and
a multiplexer for multiplexing outputs of the two polarization maintaining fibers and
coupling a multiplexed output to the nonlinear optical crystal.

75. The laser light source according to claim 74, wherein the first and second excitation
lasers are semiconductor lasers, and at least one of the two polarization maintaining fibers has a fiber
Bragg grating.

76. The laser light source according to claim 75, wherein at least one of the first and
second lasers has a first facet that is coupled to the polarization maintaining fiber and a second facet
opposite to the first facet, the first facet being specified to have a reflectance of 2% or less and the
second facet being specified to have a reflectance of 90% or more.